

DECEMBER
1953

THERE'S A PHILIPS VALVE FOR EVERY SOCKET

Amateur Radio

JOURNAL OF
THE WIRELESS
INSTITUTE OF
AUSTRALIA

For the Experimenter
and Radio Enthusiast



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socket of every transmitter or
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umhos.

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fier: 175.

Base: Octal.



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Class AB with 375v.
supply. 100 watts
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Base: Octal.



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6A8	10/-	12J5	10/-
6AC7	10/-	12SG7	10/-
6AG5	15/-	12SK7	10/-
6BE6	15/-	12SQ7	10/-
6C4	12/6	12SR7	10/-
6C5	10/-	807	10/-
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EDITORIAL



LOOKING BACK

December being the twelfth and last month of the year is usually a period of great activity and festivity.

December is also usually recognised as a suitable time for "looking back" over the activities, achievements and disappointments of the year.

Looking back upon the year's activities in Hamdom, we are pleased to note the increasing interest in field work and the R.D. Contest. We record the success of the Coronation Relay.

Amongst our achievements we count the privilege of sixteen-year-olds to sit for the A.O.C.P. examination and the technically minded to sit for Limited A.O.C.P. examination; however we must record amongst our disappointments the tardiness of officialdom in completing

the machinery necessary to give full effect to these achievements.

Probably our greatest disappointment is our failure to disassociate, in the official mind, the vexatious problem presented by Commercial "Telecasting" from the humble but nevertheless worthwhile contribution to technical progress which could be achieved by the Amateur Experimenter.

Having looked back and recorded our successes and our failures, 'tis time to put away our cares and join in the festivities knowing full well that what has not been achieved in 1953 must be attempted with greater determination in 1954.

So till then fellow Hams, a Merry Christmas and a happy respite from your labours.

FEDERAL EXECUTIVE.

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The S/N-6 Cascode 2 Metre Pre-Amplifier.

THE S/N-6 Cascode 2 Metre Pre-Amplifier is entirely self contained (except power supply) in a 3" x 4" x 5" metal box. All parts mount directly on the rear of the front panel so that construction is easy and straightforward. The 6BK7 and 6AK5 r.f. tubes are mounted horizontally on the front panel. Co-axial fittings are for the r.f. input and output connections. All tuning adjustments of the coils are made from the front of the panel.

The plate voltage required for the two tubes is low—150 volts d.c.—and can be taken off the communications receiver. Filament voltage required is 6.3 volts a.c. or d.c. at 0.625 amperes.

DESIGN CONSIDERATIONS

Many 2 metre converters and receivers, today, lack two important features which are necessary for DX work at this frequency. These two features are (1) high signal-to-noise ratio (low noise figure); (2) gain. Of these two, high signal-to-noise ratio is the most important. An amplifier could increase the signal-to-noise ratio nothing would be achieved—that is, you would notice an increase in signal level, but at the same time the noise level would be increased proportionally.

The opposite case would be an amplifier with a high signal-to-noise ratio with no increase in gain. This would be a decided advantage over the first amplifier in that the signal would appear louder to the ear, however, the S meter would show no increase in signal level. These two amplifiers are exaggerated cases, since fortunately practically all r.f. amplifiers improve the signal-to-noise ratio to a certain extent and give an increase in gain.

In the design of the S/N-6, the above two features were deemed to be of utmost importance. Since the first stage of any r.f. amplifier, receiver, or converter is the most important from a signal-to-noise ratio standpoint, it was given careful design consideration. The cascode circuit was chosen because if properly designed it will produce a high signal-to-noise ratio. A pentode could be used in this circuit for high gain, however, it would produce more noise because of the current division at the screen grid. Therefore, the low-noise twin triode type 6BK7, particularly designed for cascode circuits, was chosen.

The selection of a triode was not too difficult. At first a pentode connected 6AK5 feeding a pentode connected 6AK5 in a cascode circuit was calculated for signal-to-noise ratio. Under optimum conditions this calculated to be approximately 9 db (noise figure) which was good but still too high. Then a type 6BK7 cascode feeding another 6BK7 cascode was calculated and the overall signal-to-noise ratio was approximately 5 db (noise figure). This was considered to be very good so the original design was started.

After the circuit was designed on paper a laboratory model was constructed. This model had a tendency to break into

• Many Amateurs will remember the popular "B3-cr" pre-amplifier, of a few years back. Well here is a recently developed version for 2 metres, which will help to drag in those weak 2 metre DX stations. The 6BK7 twin triode is difficult to obtain, but it should be possible to use types available in Australia with some sacrifice in performance. Later on, the 6BK7 may be available and could then be substituted.

One word of caution—the circuit constants and layout must be followed faithfully.

oscillation. Therefore, two other models were constructed with different layouts to overcome this condition. Each of these models still showed the tendency to break into oscillation. Methods were devised to eliminate the oscillations, but it was felt they were too difficult for the average Amateur to duplicate and achieve a stable unit. A pentode connected 6AK5 was then considered for the second stage to replace the second 6BK7. This combination, 6BK7-6AK5, calculated to 8 db (noise figure) under optimum conditions. Three models were constructed, each with a slightly different layout. None of the layouts were unstable, however, the one shown in

Fig. 2 was considered the best and simplest for construction.

Another feature considered and incorporated was to make the front end broadband. This is very desirable for this band, since it eliminates the necessity for retuning when going from one end of the 2 metre band to the other. Also the output impedance was made adjustable so that a proper match could be made to the receiver. This is important since any mismatch to the receiver may tend to decrease the signal-to-noise ratio.

CIRCUIT DETAILS

Refer to the schematic circuit diagram shown in Fig. 1. The cascode section of the unit, which consists of both triode sections of the 6BK7, is of the parallel d.c. type. This type of circuit has the advantage over the series type circuit, in that a lower plate supply voltage is required and the heater-cathode voltage is lower.

The input circuit has been designed to accommodate either a 70 ohm or 300 ohm unbalanced line. For 70 ohm input, jack J1 is connected as shown. For 300 ohm input, the centre pin of J1 is connected to the junction of C1 and L1 as indicated by the dotted lines. Capacitors C1 and C2 and inductance L1 together with the attached antenna form a broadband input network to cover the entire two metre band. Once L1 is adjusted for the centre of the band no further adjustments are necessary.

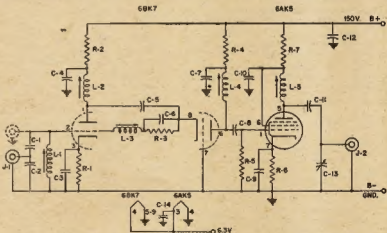


Fig. 1.—Circuit diagram of the S/N-6 Pre-Amplifier.

- C1, C2—15 pF. zero temperature, tubular ceramic.
C3, C4, C5, C6, C7, C8, C12—1,000 pF. high-K tubular ceramic.
C9, C10, C14—1,000 pF. high-K disc ceramic.
C11—25 pF. zero temperature tubular ceramic.
C13—12-120 pF. mica compression padder.
R1, R3—56 ohms, $\frac{1}{2}$ watt.
R2, R4—220 ohms, $\frac{1}{2}$ watt.
R5—2,400 ohms, $\frac{1}{2}$ watt.
R6—180 ohms, $\frac{1}{2}$ watt.
R7—2,700 ohms, 1 watt.

- L1, L2, L4—Three turns No. 24 enamel wire, spaced diameter of wire, on $\frac{1}{4}$ inch diam. former.
L3—Six turns No. 24 enamel wire, spaced diameter of wire, on $\frac{1}{4}$ inch diam. former.
L5—Two turns No. 24 enamel wire, spaced diameter of wire, on $\frac{1}{4}$ inch diam. former.
J1, J2—co-ax jacks.
6BK7 socket—9-pin miniature.
6AK5 socket—7-pin miniature.

Note.—All resistors and capacitors $\pm 20\%$ tolerance unless specified otherwise.

The plate circuit of the first triode section of the 6BK7 consists of L2, C4, C5 and R2. Capacitor C4 and Resistor R2 form a decoupling network for the supply voltage. The inductance L2 is of primary importance in that it has a decided bearing on the signal-to-noise ratio. If it is replaced by an r.f. choke, the signal-to-noise ratio may be very low. Inductance L2 tunes fairly broad, but it should be adjusted for the centre of the band by spreading the coil.

Capacitor C5 feeds the signal into the cathode of the second triode section of the 6BK7. Part of this signal is fed through L3, the neutralising inductance, which forms a parallel resonant circuit with the grid-to-plate capacitance of the first triode section. This effectively tunes out the grid-to-plate capacitance which is necessary for high signal-to-noise ratio and food stability.

The second triode section of the 6BK7 is operated as a grounded grid stage. Bias voltage for this section is obtained by the cathode current flowing through R3. Capacitor C6 effectively by-passes the r.f. around this bias resistor. The plate circuit of this section incorporates another decoupling network R4 and C7. It is also tuned to resonance at the centre of the band by coil adjustment.

The final stage consists of a type 6AK5 operating as a pentode. The input to this stage is conventional. The plate circuit utilises another decoupling network formed by resistor R7 and capacitor C10. Incorporated, also, is an impedance matching network formed by inductance L5, capacitors C11 and C13. Inductance L5 is adjusted to resonance at the centre of the band, then with the receiver connected to J2, variable capacitor C13 is adjusted for the loudest signal.

Capacitors C1, C2, C11 and C13 should be of the value and type specified. The other condensers specified can either be of the tubular type or disc type. It is highly recommended the tubular type be used, with the exception of those used in by-passing the 6AK5 to facilitate short and direct connections.

CONSTRUCTION DETAILS

It is recommended that the mechanical layout shown in Fig. 2 be followed faithfully. This layout was found to be the best from an electrical and mechanical standpoint.

The S/N-6 is constructed on a 3" x 4" x 5" box with removable front and back panels. All of the components are mounted on the back of the front panel. Before mounting the components, all of the black crackle paint should be removed. This is very important to insure good ground connections. Also the lip of the box, to which the front panel attaches, should be cleaned of all paint to further insure a good ground connection.

Dimensions are given in Fig. 2 for locating the various holes. No dimensions are given for the socket holes or input and output jacks. These will depend on the type the builder uses.

As will be noted, coils L1, L2 and L3 are in line with the input jack J1 and are mounted close to the socket. Coil

L4 is mounted above and to the right of the 6BK7 socket with coil L5 mounted to the right of the 6AK5 socket. If the dimensions outlined in Fig. 2 are followed, the coils will mount close to the sockets permitting short and direct connections. In winding the coils, leave approximately one inch of wire at the ends for soldering.

The power plug can either be mounted on the side of the box or on the rear panel. This is left up to the discretion of the builder as its location is not critical.

WIRING DETAILS

In wiring the S/N-6, the work will be much easier if a small-tip soldering iron is used. The capacitors and resistors are compactly grouped around the socket which makes the soldering operation a little difficult if a large-tip iron is used.

The 6AK5 socket is wired in the conventional manner using short direct connections. Soldering lugs placed at the socket mounting holes are used as ground tie-points.

the inductance L4 should be adjusted for maximum signal. L2 is adjusted next in the same manner, followed by the adjustment of L1. In adjusting L1 and L2, it will be found that they tune quite broad. Next, the neutralising inductance L3 should be adjusted for maximum signal. This may be tricky if the inductance of L3 is too high. In this case, there will be a tendency to oscillate, with a large increase in signal just before oscillation starts. This condition will also cause the amplifier to have a rather narrow bandwidth. So check the bandwidth if you suspect L3 is wrong.

After the above procedure has been followed, it should be repeated and the inductances realigned if necessary.

Once the above alignment procedure has been completed, no further adjustments are necessary while operating your receiver.

OPERATING INFORMATION

To coin an old expression, "the receiver is no better than the antenna," applies equally well here. Use a good antenna, and one with the proper im-

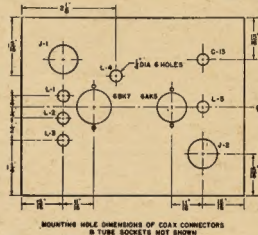


Fig. 2.—Panel layout of the S/N-6 Pre-Amplifier (back elevation).

ALIGNMENT

The alignment procedure is straightforward and simple to perform. The output of the pre-amplifier should be connected to the antenna terminals of the receiver by a short piece of cable. The cable should not be over twelve inches long and must be shielded to avoid picking up extraneous signals.

With the receiver tuned to 146 megacycles, a signal of this frequency should be fed into the antenna input (either 70 ohm or 300 ohm input). This signal can be obtained from a signal generator, transmitter, or a fairly loud signal from another Amateur station can be used. If the last two methods are used, the signal should be close to the centre of the band.

With the signal fed into the input, capacitor C13 and inductance L5 should be adjusted for maximum signal. Next

pedance—either 52 ohms or 300 ohms unbalanced. If you do this, the pre-amplifier is properly constructed, you can expect a noise figure of 6 db and a signal gain of 18-24 db.

On-the-air tests were conducted at WERMA's shack over a period of a month. During this time the S/N-6 was put through various tests and suffice to say it proved its value. Signals were heard which could not be detected without the S/N-6. Also, a definite improvement in signal-to-noise was noted on weak stations which could be detected without the pre-amplifier. This was to be expected, however, since any pre-amplifier, or receiver with a noise figure of 6 db is an exceptionally good one.

To those of you who build this 2 metre pre-amplifier, be sure to use good quality parts, good workmanship, and above all, follow the article faithfully and you'll enjoy lots of DX.

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Single 33 pF. 17/6
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Frequency Modulated, approx. 450 Mc. Valve line-up:

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5—6J6

2—2D21

1—VR105

Also contains Dynamotor, input 27v. 1.5 amp., output 285v. 60 Ma. Price £17/10/-

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Indicator Unit, Type 1047, Valve line-up: 7—EF50, 1—879, 1—VR54. Also contains a 3,000 type Relay 2,000 ohms, ten assorted Potentiometers, a two-bank Ceramic Wafer Switch, and an illuminated scale (5BP1 tube and shield not included).

These two Units are brand new, and are packed together in their original packing cases.

PRICE £21/10/- the two.

Transceiver £15/-/- } if supplied separately.
Indicator Unit £7/10/- }

VALVES

BRAND NEW IN ORIGINAL CARTONS

1H6	7/6	830B	60/-
1K7	10/6	813	60/-
2A3	15/-	VR150/30	22/6
6AC7	15/-	954	7/11
6B8	15/-	955	7/11
6F9	12/6	12A6	12/6
2051	22/6		
6K6G	12/6		
6K8	12/6		
6L7	12/6		
807	25/-		

2050, 22/6. This valve is suitable for use with Photo Cell Relay Unit, as per June, 1953, issue of "Radio and Hobbies."

COMMAND

RECEIVERS

Type BC453, 190 to 550 Kc.,

£12/10/-.

BC454, 3 to 6 Mc.,

£7/10/-.

BC455, 6 to 9.1 Mc.,

£7/10/-.

TRANSMITTERS

Type BC457, 4 to 5.3 Mc.,

£7/10/-.

BC458, 5.3 to 7 Mc.,

£7/10/-.

BC459, 7 to 9.1 Mc.,

£7/10/-.

COMMAND RECEIVER CONTROLS, Type BC450

3—Slow Motion Dials.

6—Single Pole Double Throw Switches.

4—Miniature Jacks.

3—Volume Controls, approx. 500 ohms.

Price, £1/15/-

Post. & Pack: 8/-, Interstate 8/6.

COMMAND MODULATOR UNIT, Type BC456E

In new condition, contains:

1—12J5

1—16Z5

1—VR150/30

3—24v. Relays

Price, £3/10/-

TRANSMITTERS Type TR354S

Containing Valves: 1 Rectifier VU111, 1 EF50, 1 10 Cm. Magnetron Valve complete with magnet, 1 Crystal Diode Type IN21, and 1 24 volt Blower Motor. Brand new. Price £5/19/6.

MODULATING UNIT

Type 169, containing Klystron Tube, three Neon Stabilisers, one EF50, two half-wave Selenium Rectifiers, one 5U4 Rectifier, one CV85, Potentiometers, gears, Resistors, high voltage Condensers and Transformer. Price £4/19/6.

BENDIX RADIO AZIMUTH CIRCLE LOOP AERIAL CONTROLS, Type MN22A

Price 35/-.

Post. & Pack: 4/6, Interstate 6/-.

AMATEUR TELEVISION

PART FIVE

BY E. CORNELIUS,* VK6EC

TROUBLES

The results obtained from the equipment described in the previous four parts were very encouraging, and indicated that it would be worth the trouble to re-build certain items, to overcome minor defects, and to incorporate interlaced scanning.

The troubles experienced were as follows:—

1. **Sync. Signal Generator:**
 - (a) Subject to r.f. interference.
 - (b) Vertical sync. waveform such as to cause poor horizontal sync. separation.
 - (c) Not electrically locked to the 50 cycle mains.
2. **Mixer:**
 - (a) Somewhat temperamental, and subject to a 30 c.p.m. motor-beating, after an instantaneous overload.
 - (b) High peaking beyond the required bandwidth, allowing undue amplification of noise, causing "snow."
3. **Receiver:**
 - (a) Excessive gain.
 - (b) Unreliable sync. separation.
4. **Flying Spot Scanner:** Insufficient horizontal sweep, with linearity only fair.

SYNC. SIGNAL GENERATOR

The equipment is used within a thousand feet of a 660 feet vertical radiator, radiating 10 kw. at 560 Kc., resulting in a colossal field strength in the middle of the video bandwidth. While it could be reduced to negligible proportions in the video amplifiers, it occasionally caused trouble in the sync. generator.

The frequency and amplitude of the output of the primary r.c. oscillator was caused to vary with transmitter modulation. The effect on the picture was for vertical edges to have moving waves throughout their length.

interlaced scanning. New standards were therefore adopted for this feature—

1. 245 lines per frame.
2. 50 fields per second, 2:1 interlaced.
3. 25 frames per second.
4. C.c.i.f. type sync. waveform.

INTERLACED SCANNING

In interlacing, an odd number of lines per picture are used, and two vertical scans, or fields, are completed for each. Thus, the first field (1/50 sec.) scans odd lines 1, 3, 5 . . . 243, and half of 245; the second field scans half of 245, 2, 4, 6 . . . 244. The result is that even lines of the second field fall between the odd lines of the first field. See Fig. 24.

On differentiation of this pulse train, a series of positive going pips is provided as in Fig. 25f, to synchronise the line time base, the extra half line pips being ignored easily by the time base.

In the new design sync. signal generator, the primary oscillator at 12,250 p.p.s. is a multivibrator, with three stages of frequency division (5, 7, 7) to 50 p.p.s., and division by 2 to 6125 p.p.s. for line frequency. An equalising multivibrator at 12,250 p.p.s. provides the leading edge of all sync. waveforms.

Line Blanking and Sync.

The line blanking pedestal is obtained by delaying a pulse by nearly a line

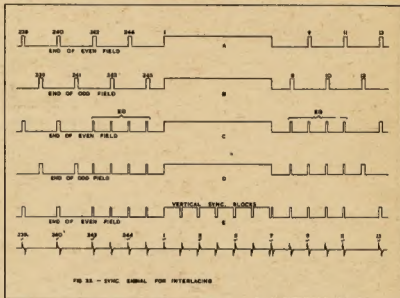


FIG. 24 - SYNC. SIGNAL FOR INTERLACING

To obtain this effect, the primary oscillator runs at twice line frequency, i.e. $12,250 \div 2 = 6,125$ —line frequency $\div 245 = 50$ —field frequency. This enables the field rate to be doubled, from 25 to 50 per second, reducing flicker without increase in bandwidth.

The sync. waveform, at the end of odd and even fields, differs, as seen in Figs. 25a and 25b. For odd fields line pulse 245 is much closer to the frame pulse, than line 244 pulse, on the even fields.

On sync. separation, the frame time base is likely to fire early on even fields, making line 2 closer to line 1 than to line 3. This is called "pairing" and is prevented by inserting equalising pulses, at twice line frequency, instead of line sync. pulses, before and after each frame pulse. See Figs. 25c and 25d.

To maintain horizontal line sync. during the frame pulse, this pulse is slotted, at twice line frequency, such that the trailing edge of the slot (positive going) corresponds in time to the leading edge of the equalising and sync. pulses. See Fig. 25e.

period. This pulse, at 6125 p.p.s. keys in every second equalising pulse, which triggers the line sync. multivibrator. See Fig. 26.

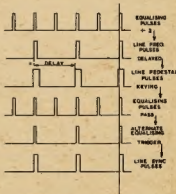


FIG. 26 - LINE SYNC & BLANKING GENERATION

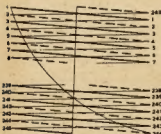


FIG. 24 - INTERLACED RASTER

The sync. trouble was manifest as a tendency for the bottom of the picture to tear out of sync. Non-locking to the mains allowed faint hum bands to be moving slowly, with an irritating effect.

I decided to minimise these defects, and at the same time to incorporate

* C/o. Station 6WA, Wagin, Western Australia.

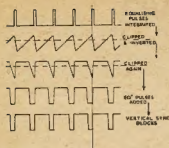


FIGURE 7-10 PHYSICAL SYNC BLOCK GENERATION

Frame Sync.

The frame sync. pulse is formed from equalising pulses, by integration and slicing, and making up the trailing edge of the slot by addition of equalising pulses.

Syn. Train Synthesis

Keying pulses, at 50 cycle rate, timed from an appropriate equalising pulse, and suitably delayed, are used for:—

1. Keying out 7 horizontal sync. pulses.
 2. Keying in 14 equalising pulses.
 3. Keying in 6 vertical sync. blocks.
- The composite sync. waveform is then clipped, and becomes a waveform, as in Fig. 25e, similar to the c.c.i.f. standard.

The 50 p.p.s. blanking waveform is compared with the 50 cycle mains in a discriminator, and feeds a correction signal back to the 12,250 p.p.s. master multivibrator for mains locking.

The sync. signal generator has eight outputs:—

1. Combined sync. for the video mixer.
2. Combined blanking for the video mixer.
3. 8125 p.p.s. driving pulses for the flying spot scanner.
4. 50 p.p.s. driving pulses for the flying spot scanner.
5. 8125 p.p.s. driving pulses for the picture monitor.
6. 50 p.p.s. driving pulses for the picture monitor.

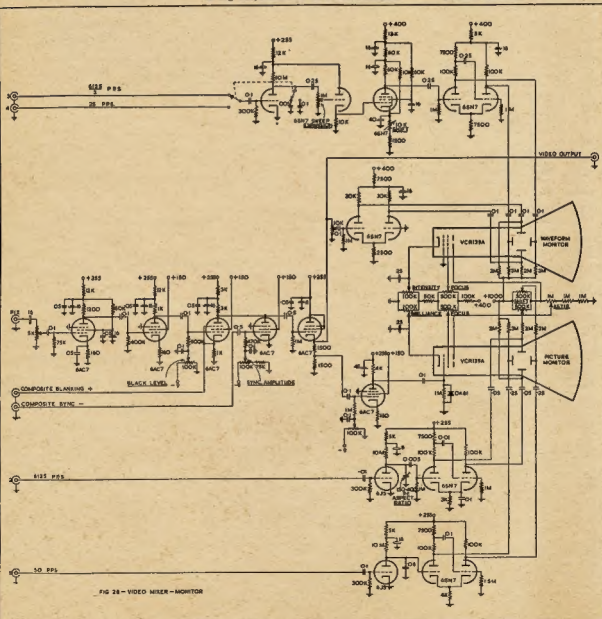


FIG 28 - VIDEO MIXER - MONITOR

7. 6125 ÷ 3 p.p.s. driving pulses for the waveform monitor (line).
8. 25 p.p.s. driving pulses for the waveform monitor (frame).

VIDEO MIXER-MONITOR

The video mixer was simplified, and one tube removed, together with the phase inverter. High peaking was effected by choice of cathode by-pass of the first stage. This was as good as the circuit described in Part 4, but still gives over compensation at high frequencies, outside the 1 Mc. bandwidth, causing "snow."

Blanking is injected into the cathode of the third stage, and sync. into the grid of the fourth. Capacitive shunting of the cathode bias resistor of the third stage, by the blanking input cable, provides additional high peaking. Another amplifier tube was added to drive the grid of the picture monitor tube, in the monitoring section, associated with the mixer. See Fig. 26 for circuit of the combined unit.

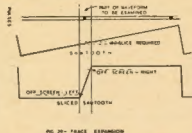
Picture and Waveform Monitor

This unit provides cathode ray tube monitoring of the transmitted picture, and of the video waveform, at 1/3 line and 1/2 field rate. Two VCR139A cathode ray tubes are used, mounted side by side. The picture monitor tube time bases are directly driven from the sync. generator. Video modulation is applied to the grid, from the mixer section, with an OA61 diode for d.c. restoration.

Horizontal deflection of the waveform monitor is obtained at 1/3 line, and 1/2 field rate, from a time base driven by

pulses from the sync. generator, with a switch for frequency selection. The video waveform is displayed vertically.

To examine the vertical sync. waveform, embracing 7 lines, considerable expansion of the horizontal trace is required, of the order of 30 to 50 screen diameters. A circuit has been devised, possibly not original, to accomplish this expansion, together with trace shift of the same order.



The circuit selects a slice of the horizontal sawtooth, and amplifies this slice. In this way, the c.r.t. spot is arrested just off screen until the selected slice of the sawtooth is reached, then travels rapidly across the screen, displaying the selected part of the complete cycle, and is arrested again just off screen, until flyback. See Fig. 29. The width of the slice, and its position can be varied. This gives "expansion" and "shift" facilities.

Using this circuit, the deflection amplifiers do not have to provide a deflec-

tion voltage in excess of say 1½ screen diameters, thus ensuring a stationary spot well off screen. By altering the part of the sawtooth where the slice is taken, effective shift of the display is obtained, independently of the deflection amplifier and deflection plate mean potentials.

The circuit as shown is very satisfactory for its purpose, but if adapted for general oscillographic work, would need some further experiment, as there is considerable interaction between trace expansion and trace shift, and linearity of the part displayed is rather poor.

RECEIVER

The receiver video amplifier gain was far greater than necessary, so the first stage was removed. This changed the polarity required at the input, and enabled the phase inverter of the video mixer to be recovered also. The vertical time base frequency had to be changed, from 25 to 50 p.p.s. and this improved the vertical linearity considerably.

A worthwhile improvement in synchronism, on the new type sync. waveform was immediately apparent, and the picture remains locked, over a far wider range of signal inputs, than is permissible for an acceptable picture. Some pairing was evident, causing an apparent 122 line picture, but improvement in the vertical sync. separator has overcome this. The sync. separator now uses three 6SH7 tubes, resulting in a vertical sync. output of a short duration negative going pulse of constant amplitude and width.

(Continued on Page 9)

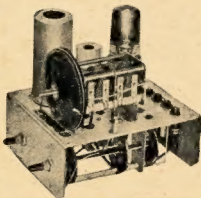
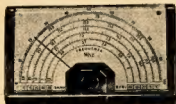
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- Protected against ingress of moisture with approved moisture sealed crystal element.
- Small — compact — lightweight — durable.
- Will not blast from close speaking.
- Precision engineering ensures realistic reproduction and high output with long life and dependable operation.

- The only unit available with a genuine sintered metal filter.
- Good high frequency response ensures excellent speech reproduction.
- Aluminium diaphragm mechanically protected and frequency controlled by "Zephyr" filter.
- Australian made throughout.
- Only carefully selected cements used throughout, to suit Australian climatic conditions.

TECHNICAL DETAILS

Rochelle salt crystal microphones are perhaps the most widely used for all types of service where quality speech and music reproduction at high output levels is a requirement. They are dependable in performance and when fitted with the appropriate "Zephyr" filter, their frequency response may be adjusted to suit any application or requirement.

This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved. Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

All crystal elements are mounted on high grade suspension pillars being fixed thereto with a good quality cement, thus ensuring stability and long life.

Case $1\frac{1}{2}$ " diameter (rear), $\frac{3}{8}$ " thickness, 1-13/16" overall diameter (front) with filter fitted.

Frequency Response = 60-6,500 c.p.s.
Output Level = -45 db (0 db = 1 volt/dyne/cm²)
Impedance = Model 1XA Grid 1 — 5 megohms.



Approximate Frequency Response Curve

AVAILABLE FROM ALL LEADING TRADE HOUSES

ZEPHYR PRODUCTS PTY. LTD. 118 WATTLETREE RD., ARMADALE, VICTORIA

AMATEUR TELEVISION

(Continued from Page 7)

FLYING SPOT SCANNER

The deflection sensitivity of the VCRI12 is very different on the X and Y plates. I found it hard to drive horizontally at 6125 p.p.s. By interchanging the X and Y axes, and rotating the unit axially through 90 degrees, I could then drive the insensitive plates at 50 p.p.s., and the high frequency sawtooth then gave sufficient raster width, with better linearity, on the more sensitive pair of plates. The vertical time base discharge capacitor was reduced to 0.25 uF, for the 50 p.p.s. sawtooth.

EPICURE

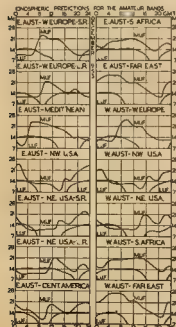
The equipment described now uses a total of 84 tubes, which may seem a hard way of obtaining a mediocre result. But the equipment as it stands may readily be converted to 625 lines, with a minimum of alteration. The present limitation is the resolution of the flying spot scanner tube.

In Part 1, I stated that commercial camera tubes were not available. I now find that an English firm will supply slightly flawed miniature camera tubes, to bona fide experimenters, at a reduction from £135 to £25 sterling. Deflection yoke, focus and alignment coils, etc., come to an additional £35 sterling. This is still a costly item, but may be within the reach of some Amateurs.

I hope that this series has interested some of my readers in the practical side of Television, and possibly encouraged a few to try their hand in this field. If I can amplify some points on which I have been obscure, or help in any way, please write, and I will do my best.

The End.

PREDICTION CHART FOR DEC., 1953



AMATEUR CALL SIGNS

FOR MONTH OF OCTOBER, 1953

ADDITIONS

VK— New South Wales
2AKB—R. J. Baly, "Shelcoke," 25 Shell Cove Road, Neutral Bay, N.S.W.
2AUD—E. McDonald, Stonebush, 15 Lombard St., Balgowlah; Postal: 486 (M) Sqdn. W.T. Section, R.A.A.F., Richmond, N.S.W.

Victoria

2ADZ—G. Delahoy, Eden Park Road, Whittens.
3AKZ—K. Head, 3 Annadale St., Kew, E.4.
3APB—R. P. A. Beresford, 141 Albion St., East Brunswick.
3AZA—A. A. Hight, R.A.A.F. School of Radio, Bathurst.

Queensland

41M—J. D. MacLean, No. 2 Holman Land, Kangaroo Point, Brisbane.
40V—O. V. Abudell, 24 Railway Ave., Mt. Isa.
41UJ—F. L. Dubois, Thursday Island.

Western Australia

6KL—H. Leaver, The Homestead, Byford.
6SF—J. C. Watson, Station Mobile on board M.V. "Silver Fir," Postal 11 Bernard St., Claremont. (This entry appeared as VK4SF in the September List and should now be deleted.)

ALTERATIONS

VK— New South Wales
2AU—"Glen Shee," Little Harbury, Kanimbie Valley.
2MB—20 Dowling Street, Redfern.
2FW—12 Francis Street, Stonebush.
2RJ—R.A.A.F. Transmitting Station, Londonderry.
2UN—4 Herbert St., Inverell; Postal: P.O. Box 159, Inverell.
2UP—33 Moore Street, Harbord.
2VJ—35 Woodlands Avenue, New Lambton.
2V8—33 Victoria Street, Stirlingfield.
2ACH—45 Gifford Street, Lidcombe.
2BFF—34 Ruskin Street, Byron Bay.
2AIZ—11 Gray Street, Goulburn.
2AJD—47 Lindfield Avenue, Lindfield.
2AJM—49 Inverallan Avenue, Pyrmble.
2AMK—Postal Address: P.O. Box 25 Hornsby.
2AJO—Station No. 6 "Kelvin," 43 Victoria Parade, Manly.

2AQB—31 Farnell Street, Gladstoneville.
2ARJ—30 Bedford Street, Willoughby.
2ARQ—25 Kewburgh Street, Leichhardt North.
2ARV—Lat 174 Alexander St., Wolland, New-castle.

2ARY—1 Wyndham Street, Alexandria, Sydney.
2ASB—No. 3 Flat, 13 Howe Crescent, Alinalie, Canberra.
2ATA—Flat 4, 124 Alison Road, Randwick.
2AWP—"Wandooona," Moree.

Victoria

3BL—613 Main Street, Ballarat.
3EY—341 Mt. Alexander Road, Ascot Vale.
3FF—381 St. Georges Road, Thornbury.
31J—87 York Street, South Melbourne.
31J—Flat 16, Regent Court, 200 Toorak Road, South Yarra, S.E.1.
3XI—Princes Highway, Warrnambool.
3YA—10 Belair Avenue, Glenroy.
3ABK—Leonard Street, Belmont, Geelong.
3ABW—Postal Address: Leonard St., Belmont, Geelong.

3ADD—23 View Street, Auburn.
3AJT—The Cavendish, 408 Burwood Rd., Hawthorn.

3AOB—151 High Street, Shepparton.
3AOC—Windsor Road, Boronia.
3AOC—Station 104 St. Heller St., Heidelberg.
3ATP—25 Faraday Street, Carlton.
3ATP—19 Foulter Street, Ashburton.

Queensland

41R—4a Crichton Street, Eastern Heights, Ipswich.
45M—221 McLeod Street, Cairns.

South Australia

5CH—14 Dandabon Place, Mount Gambier.
5GW—Station 14 Second Ave., Sefton Park; Postal: 29 Grasmere Rd., Prospect.
5LP—Postal 2 Olive Ave., Westbourne Park; Station Mobile on board S.S. "Dylla" (C/o A.S.B. Bond St., Newcastle, 2.N. N.S.W.).

5LX—10a Valmai Avenue, Kings Park.
5LX—(Portable) 10 Valmai Ave., Kings Park.
5SA—Section 1947, Police Paddock, Darwin, N.T.
5T3—81 Lindfield Ave., Berrwood Park.
5Z0—19 Hartow Road, St. Peters.

Western Australia

6BY—C/o 125 Canning Highway, South Perth.
6CK—C/o Flying Doctor Service Control Station, Meekatharra.

SDV—30 Walker Avenue, West Perth.
6EJ—Station: Property of Collins & Co., 8 miles north of Bencubbin, Postal: C/o Post Office, Bencubbin.

Territories

6DS—Lae, T.M.G.
6RM—Bulolo, T.M.G.
6W1—Chabai, via Sohano, Bougainville, T.M.G.

DELETIONS

New South Wales VKs 2AN, 2DS, 2FS, 2IS, 2JK, 2ML, 2TD, 2TP, 2TQ, 2ZA (now operating under VK4AZA), 2ABH (now operating under VK4APB), 2ADJ, 2AFH, 2AHC, 2AJN, 2ANV, 2ASD, 2ATT, 2AWL.

Victoria VKs 2HU, 2NP, 2NV (now operating under VK4AGN), 3OP, 3QX, 3VT, 3WJ, 3AFI, 3AGK, 3AOZ, 3ATM.

Queensland VKs 4AJ, 4AP, 4FK, 4GI (now operating under VK4AIT), 4IM, 4JN (now operating under VK4JNY), 4KT, 4TV.

South Australia VKs 5GP, 5RY (now operating under VK4PE), 6DU, 6RH, 6WD.

Tasmania, VK4JT.

Territories: VK4IA.

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Ross A. Hull Memorial V.H.F. Contest, 1953

RULES

1. The Contest will take place in the 50-54 Mc. band and will commence at 0001 hours E.A.S.T. on 19th December, 1953, and will continue until 2359 hours E.A.S.T., 3rd January, 1954.

2. Points may only be claimed for contacts outside the competitor's own call area.

3. Only one contact with any one station per twenty-four hours commencing midnight E.A.S.T. to count as a scoring contact.

4. Exchange of a serial number will constitute a contact.

5. The serial number of five or six figures will be made up of the RS (telephony) or RST (telegraphy) reports plus three figures which may commence with any number between 001 and 100 for the first contact and which must increase in value by one for each successive contact, e.g., if the number chosen for the first contact is 050, then the number for the second contact must be 051, for the third 052, and so on. If any contestant reaches 999, then he will start again 001 and continue.

6. Scores will be calculated on a points basis as shown in the table appended.

7. Logs should contain the following information: Date, time (E.A.S.T.), call of station contacted, serial number sent, serial number received, points claimed for the contact, and at the foot of each page, total points claimed, and at the end the grand total. Logs should be

signed by the competitor, together with a declaration to the effect that the station was operated strictly in accordance with the Rules and spirit of the Contest and that the decision of the Federal Contest Committee shall be final and binding. Logs must be received by the Federal Contest Committee, Box 1734, G.P.O., Sydney, not later than the 24th February, 1954.

8. Entries will be accepted from all States of the Commonwealth and Districts of New Zealand. Check logs from other countries will be appreciated by the Contest Committee.

9. For the purposes of scoring, Northern Territory will count as a separate call area, VK9 will be considered as a

State of the Commonwealth, and VK1 (if any activity) as a separate country.

10. The decision of the Federal Contest Committee will be final and binding upon all matters pertaining to this Contest.

11. The regulations governing the control of Amateur Radio in each contestant's country must be observed.

12. Awards. The outright winner of the Contest within the Commonwealth of Australia will receive an appropriately inscribed certificate and, in addition, if a financial member of the W.I.A., will hold the Ross A. Hull Memorial Trophy for one year.

The highest scorer in each call area in Australia and New Zealand will be awarded a certificate. In addition, the Federal Contest Committee will have the right to make any additional awards.

	VK2	VK3	VK4	VK5	VK6	VK7	N.T.	VK9	ZL1	ZL2	ZL3	ZL4	Other Countries
VK2	—	5	4	2	10	4	6	10	7	7	7	7	20
VK3	—	5	—	4	4	9	10	6	11	7	7	7	20
VK4	—	4	4	—	5	11	7	3	7	8	8	8	20
VK5	—	3	4	5	—	7	5	3	10	8	8	8	20
VK6	—	10	9	11	7	—	10	12	14	17	17	17	20
VK7	—	4	10	7	5	10	—	7	12	7	7	7	20
N.T.	—	6	6	3	3	12	7	—	3	15	15	15	20
VK9	—	10	11	7	10	14	12	3	—	12	13	14	20
ZL1	—	7	7	7	8	17	7	15	12	—	4	2	20
ZL2	—	7	7	8	8	17	7	15	13	4	—	4	20
ZL3	—	7	7	8	8	17	7	15	14	3	4	—	20
ZL4	—	7	7	8	8	17	7	15	15	3	3	4	—
Other Countries	20	20	20	20	20	20	20	20	20	20	20	20	—

To obtain points per contact, look down the column of your call area until you come to the line of the State contacted. The figure where the two lines intersect is the points score for that contact. For example, VK5 works VK4—points score is 5.



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N.E.W. V.H.F. GROUP OF THE W.I.A.

VICTORIAN V.H.F. GROUP

The next meeting of the V.H.F. Group will be held at Science House at 7.30 p.m. on 4th December. The last meeting held on 13th November was well patronised. The lecturer for the evening was Mr. Bob Winch, the Group President. His lecture was on installation of car rigs. A vote of thanks was given by Dr. Bob Black for the meeting.

80 Mc. This band shows signs of opening up and there should be some activity soon. 3RU and 3VW have not given up yet!

144 Mc. This band has been fairly active this month, the highlight being the Night Hidden Tx Hunt, held on Wednesday, November 4, at 1.30 p.m. till 2.30 p.m. There was a good turn-up of mobile stations, these being 2WJ and 2AJZ, 2HL and 2ABZ, 2ABH, 2HS and 2APQ, 2AWZ, 2HO, 2OA, 2KS and 2AGY. 2AWQ and company had engine trouble, and 2AFM. Last but not least, 2ANF, 2EW and Kex Griffiths as the hidden Tx. As usual, John and Kex had the boys guessing. First to get in was 2KS, he arrived at 8.17 p.m., next was 2AWZ at 8.27 p.m., then the rest were directed in. There was ten car loads. A good night was had by all. The location, about the highest spot around, was Duffy's trig station on the western side of Frenchs Forest. The conclusion of the night. We were very glad to see Dave Andrews there mobile, but where was 2ABO!

There has been good openings to the South and 3GU has been again worked from Sydney, his frequency is 144 Mc. To the North, there has also been good openings. 2ADY, 2AGY and 2BZ have been worked at 59 in Sydney. Bob Wirth 2OA and Bill 2ABK have both worked Newcastle for the first time. Congrats to both. Morris 2HL and John 2WJ have contacted each other using halos both ends, over 50 miles with fairly small inputs. Glad to hear 2WJ, 2AGZ, 2JH and 2AWQ (late of VKES) on 144 Mc. 2WJ has started a lunch time session on 144 Mc. and gets quite a few contacts between 1 and 1.30 p.m.

2APQ and 2KS are amusing themselves using duplex on 144 Mc. and doing well too. Keep looking out for 2ANU at Murrumbidgee and 3VU at Singleton. They are on 144 Mc. 2ABK is back, glad to hear this. Mobile stations heard around Sydney this month are 2ADY, 2HL, 2AGY, 2WJ, 2ABZ, 2ABO, 2OA and to these we add 2HS and 2VW almost mobile with 2MQ, 2KK and 2GZ well on the way. Old time 2AWZ is back, and Dave is out for DX. 2AKK, 2ACC, 2YM and 2ABU are putting out a fine signal on 144 Mc. Peter 2X in the Mountains is all set for DX on 144 Mc. Don 2PO, from Ballarat, Vic., paid a visit to 2APQ and shows much interest in 144 Mc. 2BZ of Newcastle is on the lookout for DX. His frequency is 144.35 Mc., c.w. or phas. Max 2OT has improved his signal and is 50 in Sydney on c.w., he was not in during the opening. (J may have been a phone contact Max! Tom 2FO has also been heard with a much improved signal.

The Hunter Branch of the W.I.A. had a Hidden Tx Hunt on 3rd October on 144 and 3.5 Mc. This was held at night and started at 7.30 p.m. and ended at 11 p.m. This is something new in Tx Hunts. [Further details appeared last issue in the Hunter Branch notes.—Ed.]—2HO.

The third C.D.E.N. 2 mx Triangulation Test held on 14th October was quite successful, 15 stations participating. Home stations had the problem of trying to locate the 3L positions from each of which 3LN made a five minute transmission. Afterwards, when the positions were announced, it was apparent that many accurate bearings had been obtained. The six locations cheerfully chosen on this occasion were: Colburn Cemetery, Kew Cemetery, Burwood Cemetery, Brighton Cemetery, St. Kilda Cemetery, Melbourne General Cemetery. Len was accompanied by XYL Phil, whom he finds indispensable as navigator. The next test will be on 9th December. It is proposed to hold the first mobile for hunt on the second Wednesday in February.

With excellent weather conditions, the first v.h.f. field day for the season on 25th October was quite successful. Apparently activity was confined to the 2 mx band, where 3LN operated from Mt. Dandenong and 2ADU near Romsey. Both these stations also worked mobile on the way. In addition, 3OJ was portable near Gembrook. A good number of home stations, including some in the country, were active during the day. The next field day is scheduled for 6th December.

Six metres is showing signs of increasing interest in the opening months of the year. We understand that VKQBD calls and listens each evening on the 6 mx band at 7.30 p.m. He is using a four ft. beam and running crystal control with an 835 p.p.a. and the receiving set-up is a c.c. converter into a 2C34. Look for him on 50.2 Mc.

Following a request by the Victorian Division Council to provide a number of lectures for the November general meeting, the V.H.F. Group duly carried this out to the best of its ability. One of those present, Herb 3VO, V.H.F. Group Chairman, gave a brief outline of activities and conditions experienced on these bands and then introduced Max 3HQ, who spoke on crystal controlled converters. A foundation member of the W.I.A., Max still derives a lot of satisfaction from his Radio 6 in respect of his endeavouring on the v.h.f.s. to match his worthy achievements of pre-war days on the h.f. bands. He then discussed the problems he has ascribed the modifications which he had made to his AR361 to get it going on 2 mx. Herb followed this by a brief description of the method of getting the ZB3 homing adaptor on to 2 mx as a converter. Jim 2ABA then gave a general outline of v.h.f. tx types and problems involved. Finally, Len 3LN spoke on mobile work, having on view his 2 mx job consisting of a 3 tube c.c. tx and super regen rx with r.f. stage, and employing co-circuit circuits. This unit is quite selective and has the inherent property of suppressing auto ignition interference. He gave a brief outline of the C.D.E.N. triangulation and mobile tests. Len displayed the qualities of a magician when he produced a bundle of VHF 6 rods in respect of the centre one, and up sprang a complete three el. 2 mx beam.—2ABA.

SOUTH AUSTRALIA

Albert 2EL reports working VK6s last month on 6 mx, with Ron 2MK, in his own QTH, not far behind him. Keith 2XY and 2YB initiated an action. Brian 2CA and Ron 2NL on the way with the usual weekly deal. Bill 2SD, with the super-cooper beams and tower, is repair-

ing the ravages of the weather in preparation for the coming season, and still doing a good job on Sunday mornings with the 2WV relay station. 2HC also does a job on the 2WV relay and has been heard down here. Austin 3WO, at Laura, hopes to be on 50 Mc. soon along with Bob 2SG at Crystal Brook—line of sight from the high mast, Bob!

Country activity seems to be on the build up and on 2 mx we have Ray 2DA at Crystal Brook working the city with excellent strength. Clem 50J, working Hugh 5AV on 2 mx, but reports the band really needs a shot of adrenaline to put some life into it. Clatton and Frank Holsten had a rather unusual experience with a 20 mx xial converter using a 6AK5 in the r.f. stage. Parasitic oscillations were being radiated on 388 Mc. and of course the reception on 20 mx was well nigh impossible. The signal was tunable and the logical exploration seems to be that with such a high 20 tube, the condenser with its short leads was acting as a high Q tank on 388 Mc. and controlling the oscillations. You may remember a grid-dip oscillator, in "Radio & Hobbies" which used a loop to hunt the Lf. coil to reach the v.h.f. bands, so perhaps Clem was right, Frank.

On 228 Mc. there are good contacts to be had and plenty to learn. Don't put your champagne relay coil in the h.t. supply to the 2x. Rex 8KV solved that one for Warwick 8FS, and with such a high 20 tube, the condenser with its short leads was acting as a high Q tank on 388 Mc. and controlling the oscillations. You may remember a grid-dip oscillator, in "Radio & Hobbies" which used a loop to hunt the Lf. coil to reach the v.h.f. bands, so perhaps Clem was right, Frank.

In the city there is plenty of activity with 2KA, 2TD, 3JO, 3JM, 3HN, 3LB, 3LW (two signals from him!), 8FS and 8JK (the discone antenna should be the shot for you Jim, it looks like an umbrella to start with!).

In the country we have Nobby 8CV at Whyalla working Bob 8OD at Pirie occasionally well across the gulf, with Em 8EN also getting under way on 3 mx and with the Woomera Club 8WC under the auspices of 8OC, maybe we will hear some v.h.f. signals from afar! In the Murray area there is plenty of activity, the v.h.f. men although they haven't worked the Mount yet, either Lofy or Gambier, but the S.E. States are still looking for a very active small group at Pt. Lincoln!

As Xmas approaches, I wish you all, along with the XYLs and harmonics, the compliments of the season. Best regards for the festive 11th January at the Gorge Oval. Joe and his wife and daughters have made some wonderful prizes for the winter awards and children. Book the date NOW.—2XU.

HINTS AND KINKS

At a recent "Hints and Kinks" night of the Victorian Division of the W.I.A., Fred Bail, VK3YS, made a good suggestion re the use of a jeweller's fretsaw. He pointed out that the blade should be reversed so that the blade cuts on the "draw" stroke and not on the "push" stroke as an ordinary hacksaw blade. Since receiving this hint, the mortality rate of my fretsaw blades has gone down by 90 per cent., and also it cuts a much straighter and truer line.

CHRISTMAS

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DX ACTIVITY BY VK3AHH

DX HIGHLIGHTS

ZC3AA is now operating from Christmas Island on c.w. and phone.

ZL3JA plans a "DXpedition" to Tokelau Island (probable prefix ZMT).

G2RO intends to work from Sarawak and Borneo beside other places. Details of his future trips will be published later.

BAND CONDITIONS

Reports on conditions and activity in October reached a record number. Each week-end provided some section of either our VK-ZL or the "CQ" DX Contest, which undoubtedly contributed to the increased activity. I hope all participants enjoyed their contest period. Before reporting on this month's DX I want to remind readers that—

(1) An asterisk indicates DX stations or prefixes worked, and

(2) All times are in O.M.T.—zero time—x.

2.5 Mc: Only conditions to North America were reported. Don BALQ spoke to WQDZ, and a series of W's was worked on c.w. (1100-1200) by LUBH.

7 Mc: As the reports show, this band again supplied us with good DX conditions. W-land and the Pacific Islands were consistently working in the 1000-1500 range at times even signal strengths. European and Mediterranean conditions were more reliable over the long path (0800-0900). The short path (1400-1500) showed 1000-1100 provided more or less regular break-throughs to Central-America and South America. South East Asia and the Far East could be contacted around 1100-1400 if stations in those areas were active.

All stations report W contacts in addition to the following: **NO 2A1B VPBDQ**, **4A1E LAMC**, **4A1F**, **4A1G**, **4A1H**, **4A1I**, **4A1J**, **4A1K**, **4A1L**, **4A1M**, **4A1N**, **4A1O**, **4A1P**, **4A1Q**, **4A1R**, **4A1S**, **4A1T**, **4A1U**, **4A1V**, **4A1W**, **4A1X**, **4A1Y**, **4A1Z**, **4A1AA**, **4A1AB**, **4A1AC**, **4A1AD**, **4A1AE**, **4A1AF**, **4A1AG**, **4A1AH**, **4A1AI**, **4A1AJ**, **4A1AK**, **4A1AL**, **4A1AM**, **4A1AN**, **4A1AO**, **4A1AP**, **4A1AQ**, **4A1AR**, **4A1AS**, **4A1AT**, **4A1AU**, **4A1AV**, **4A1AW**, **4A1AX**, **4A1AY**, **4A1AZ**, **4A1BA**, **4A1BB**, **4A1BC**, **4A1BD**, **4A1BE**, **4A1BF**, **4A1BG**, **4A1BH**, **4A1BI**, **4A1BJ**, **4A1BK**, **4A1BL**, **4A1BM**, **4A1BN**, **4A1BO**, **4A1BP**, **4A1BQ**, **4A1BR**, **4A1BS**, **4A1BT**, **4A1BU**, **4A1BV**, **4A1BW**, **4A1BX**, **4A1BY**, **4A1BZ**, **4A1CA**, **4A1CB**, **4A1CC**, **4A1CD**, **4A1CE**, **4A1CF**, **4A1CG**, **4A1CH**, **4A1CI**, **4A1CJ**, **4A1CK**, 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14 Mc: The good old 20 mx band gave DXers an excellent time during October, although conditions were in general found to be reliable. Conditions to North, Central, and South America often existed between 0100 and 1100 and around 2100-2300, but were not very reliable during the later period. Break-throughs to Europe and the Middle East occurred irregularly, via the long route (0500-0600) and, more consistently, over the short path (1800-1900). Times for Africa were 0200-0300, 1300-1500 and around 2300 (North and East Africa).

Almost all reports (c.w. and phone) included the normal run of common European, W, K/A/J, KH6, KX6, KG6 and KR6.

Further s.w. activity was reported by Brian 1BA (forwarded by IKL), JZOKF, G14, C2P, L10, O2E, RUM 1BL, FYL, FYR, FYV, FYW, FYX, FYZ, KVA, 2A1H, FIDAR, FIBAT, PARAY, C2BF, C2BH, KPA4Z, ZC4ID, JZOKF, C2EID, JZOKF, G15, KXAA, G14P, G14Q, G14R, G14S, G14T, G14U, G14V, G14W, G14X, G14Y, G14Z, G14AA, G14AB, G14AC, G14AD, G14AE, G14AF, G14AG, G14AH, G14AI, G14AJ, G14AK, G14AL, G14AM, G14AN, G14AO, G14AP, G14AQ, G14AR, G14AS, G14AT, G14AU, G14AV, G14AW, G14AX, G14AY, G14AZ, G14BA, G14BB, G14BC, G14BD, G14BE, G14BF, G14BG, G14BH, G14BI, G14BJ, G14BK, G14BL, G14BM, G14BN, G14BO, G14BP, G14BQ, G14BR, G14BS, G14BT, G14BU, G14BV, G14BW, G14BX, G14BY, G14BZ, G14CA, G14CB, G14CC, G14CD, G14CE, G14CF, G14CG, G14CH, G14CI, G14CJ, G14CK, G14CL, G14CM, G14CN, G14CO, G14CP, G14CQ, G14CR, G14CS, G14CT, G14CU, G14CV, G14CW, G14CX, G14CY, G14CZ, G14DA, G14DB, G14DC, G14DD, G14DE, G14DF, G14DG, G14DH, G14DI, G14DJ, G14DK, G14DL, G14DM, G14DN, G14DO, G14DP, G14DQ, G14DR, G14DS, G14DT, G14DU, G14DV, G14DW, G14DX, G14DY, G14DZ, G14EA, G14EB, G14EC, G14ED, G14EE, G14EF, G14EG, G14EH, G14EI, G14EJ, G14EK, G14EL, G14EM, G14EN, G14EO, G14EP, G14EQ, G14ER, G14ES, G14ET, G14EU, G14EV, G14EW, G14EX, G14EY, G14EZ, G14FA, G14FB, G14FC, G14FD, G14FE, G14FF, G14FG, G14FH, G14FI, G14FJ, G14FK, G14FL, G14FM, G14FN, G14FO, G14FP, G14FQ, G14FR, G14FS, G14FT, G14FU, G14FV, G14FW, G14FX, G14FY, G14FZ, G14GA, G14GB, G14GC, G14GD, G14GE, G14GF, G14GG, G14GH, G14GI, G14GJ, G14GK, G14GL, G14GM, G14GN, G14GO, G14GP, G14GQ, G14GR, G14GS, G14GT, G14GU, G14GV, G14GW, G14GX, G14GY, G14GZ, G14HA, G14HB, G14HC, G14HD, G14HE, G14HF, G14HG, G14HH, G14HI, G14HJ, G14HK, G14HL, G14HM, G14HN, G14HO, G14HP, G14HQ, G14HR, G14HS, G14HT, G14HU, G14HV, G14HW, G14HX, G14HY, G14HZ, G14IA, G14IB, G14IC, G14ID, G14IE, G14IF, G14IG, G14IH, G14II, G14IJ, G14IK, G14IL, G14IM, G14IN, G14IO, G14IP, G14IQ, G14IR, G14IS, G14IT, G14IU, G14IV, G14IW, G14IX, G14IY, G14IZ, G14JA, G14JB, G14JC, G14JD, G14JE, G14JF, G14JG, G14JH, G14JI, G14JJ, G14JK, G14JL, G14JM, G14JN, G14JO, G14JP, G14JQ, G14JR, G14JS, G14JT, G14JU, G14JV, G14JW, G14JX, G14JY, G14JZ, G14KA, G14KB, G14KC, G14KD, G14KE, G14KF, G14KG, G14KH, G14KI, G14KJ, G14KK, G14KL, G14KM, G14KN, G14KO, G14KP, G14KQ, G14KR, G14KS, G14KT, G14KU, G14KV, G14KW, G14KX, G14KY, G14KZ, G14LA, G14LB, G14LC, G14LD, G14LE, G14LF, G14LG, G14LH, G14LI, G14LJ, G14LK, G14LL, G14LM, G14LN, G14LO, G14LP, G14LQ, G14LR, G14LS, G14LT, G14LU, G14LV, G14LW, G14LX, G14LY, G14LZ, G14MA, G14MB, G14MC, G14MD, G14ME, G14MF, G14MG, G14MH, G14MI, G14MJ, G14MK, G14ML, G14MN, G14MO, G14MP, G14MQ, G14MR, G14MS, G14MT, G14MU, G14MV, G14MW, G14MX, G14MY, G14MZ, G14NA, G14NB, G14NC, G14ND, G14NE, G14NF, G14NG, G14NH, G14NI, G14NJ, G14NK, G14NL, G14NN, G14NO, G14NP, G14NQ, G14NR, G14NS, G14NT, G14NU, G14NV, G14NW, G14NX, G14NY, G14NZ, G14OA, G14OB, G14OC, G14OD, G14OE, G14OF, G14OG, G14OH, G14OI, G14OJ, G14OK, G14OL, G14OM, G14ON, G14OO, G14OP, G14OQ, G14OR, G14OS, G14OT, G14OU, G14OV, G14OW, G14OX, G14OY, G14OZ, G14PA, G14PB, G14PC, G14PD, G14PE, G14PF, G14PG, G14PH, G14PI, G14PJ, G14PK, G14PL, G14PM, G14PN, G14PO, G14PP, G14PQ, G14PR, G14PS, G14PT, G14PU, G14PV, G14PW, G14PX, G14PY, G14PZ, G14QA, G14QB, G14QC, G14QD, G14QE, G14QF, G14QG, G14QH, G14QI, G14QJ, G14QK, G14QL, G14QM, G14QN, G14QO, G14QP, G14QQ, G14QR, G14QS, G14QT, G14QU, G14QV, G14QW, G14QX, G14QY, G14QZ, G14RA, G14RB, G14RC, G14RD, G14RE, G14RF, G14RG, G14RH, G14RI, G14RJ, G14RK, G14RL, G14RM, G14RN, G14RO, G14RP, G14RQ, G14RR, G14RS, G14RT, G14RU, G14RV, G14RW, G14RX, G14RY, G14RZ, G14SA, G14SB, G14SC, G14SD, G14SE, G14SF, G14SG, G14SH, G14SI, G14SJ, G14SK, G14SL, G14SM, G14SN, G14SO, G14SP, G14SQ, G14SR, G14SS, G14ST, G14SU, G14SV, G14SW, G14SX, G14SY, G14SZ, G14TA, G14TB, G14TC, G14TD, G14TE, G14TF, G14TG, G14TH, G14TI, G14TJ, G14TK, G14TL, G14TM, G14TN, G14TO, G14TP, G14TQ, G14TR, G14TS, G14TT, G14TU, G14TV, G14TW, G14TX, G14TY, G14TZ, G14UA, G14UB, G14UC, G14UD, G14UE, G14UF, G14UG, G14UH, G14UI, G14UJ, G14UK, G14UL, G14UM, G14UN, G14UO, G14UP, G14UQ, G14UR, G14US, G14UT, G14UU, G14UV, G14UW, G14UX, G14UY, G14UZ, G14VA, G14VB, G14VC, G14VD, G14VE, G14VF, G14VG, G14VH, G14VI, G14VJ, G14VK, G14VL, G14VM, G14VN, G14VO, G14VP, G14VQ, G14VR, G14VS, G14VT, G14VU, G14VV, G14VW, G14VX, G14VY, G14VZ, G14WA, G14WB, G14WC, G14WD, G14WE, G14WF, G14WG, G14WH, G14WI, G14WJ, G14WK, G14WL, G14WM, G14WN, G14WO, G14WP, G14WQ, G14WR, G14WS, G14WT, G14WU, G14WV, G14WW, G14WX, G14WY, G14WZ, G14XA, G14XB, G14XC, G14XD, G14XE, G14XF, G14XG, G14XH, G14XI, G14XJ, G14XK, G14XL, G14XM, G14XN, G14XO, G14XP, G14XQ, G14XR, G14XS, G14XT, G14XU, G14XV, G14XW, G14XX, G14XY, G14XZ, G14YA, G14YB, G14YC, G14YD, G14YE, G14YF, G14YG, G14YH, G14YI, G14YJ, G14YK, G14YL, G14YM, G14YN, G14YO, G14YP, G14YQ, G14YR, G14YS, G14YT, G14YU, G14YV, G14YW, G14YX, G14YY, G14YZ, G14ZA, G14ZB, G14ZC, G14ZD, G14ZE, G14ZF, G14ZG, G14ZH, G14ZI, G14ZJ, G14ZK, G14ZL, G14ZM, G14ZN, G14ZO, G14ZP, G14ZQ, G14ZR, G14ZS, G14ZT, G14ZU, G14ZV, G14ZW, G14ZX, G14ZY, G14ZZ.

LUSAQ, ZK3AA, FK3AC, VS1*, VS2*, VS3*, CR3AH, 4X3RE, 4STNG, 3SPM, ZK3AB, HB3X/MM*

And here are the 20 mx phone reports of the month: **2A1H** HPFL, **Y2AM**, **AP2R**, **KG4AO**, **K03AA**, **KAGU**, **CN8MM**, **ZS1RJ**, **CN8T**, **CN8F**, **K2AWZ**, **T3AA**, **H3CL**, **H3CA**, **CN8C**, **DUIVC**, **VU2**, **VRAJE**, **VS1**, **VS2**, **VS3**, **ZC3VM**, **OAAV**, **VS1BM**, **VS2BM**, **ZK3AA**, **YV4DC**, **KW3AA**, **K3AAJ**, **OZTE/MM**, **2A1B**, **FG3AD**, **1100**, **1A0U** **ZK3CN**, **VU2**, **VS1**, **VS2**, **VS3**, **VS4**, **K3**

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FEDERAL

AMATEUR CALL SIGN BOOK

Progress with the preliminary work for the publication early next year of the Australian Amateur Call Sign Book for which the C.I.R.O. has been granted the copyrights under the terms of a public tender—have progressed very satisfactorily.

Advertising copy is rolling in and design work commences on a layout and preliminary design for the front cover—something appropriate to Ham Radio and call signs. This design will include the radio set used by you fellows have any fare for design work of this type here is an opportunity to submit your idea. It need not be expertly drawn so long as it is the design that counts. You can tick it into professional shape. Forward your rough sketch or what have you direct to the Federal Secretary, Box 3811W, G.P.O., Melbourne, C.I.

ANOTHER HAM FOR HEARD ISLAND

There's no doubt about it! Despite all heard "brass hat" criticism that Amateurs are a dying race and contribute little to scientific progress in the modern electronics era, it still seems to the writer that Amateur still may an important Government post—in fact you will find them in top positions in almost every section of the radio and electronic field the Commonwealth over, nay, the world over.

Yet another Ham goes to the Antarctic as an official radio operator and communications man. This time it's George Deahay, VK3AED. George leaves for Heard Island somewhere about the 10th January, 1954, and will be taking his own 100W rig with him for operation in the 7 and 14 Mc. bands on 30 and cw.

We will be looking for contacts everywhere in the world, but particularly back home in VK Australia. Give him a shout boys if you hear him on the air.

OPERATING TECHNIQUE

Currently appearing in several overseas magazines are some interesting points for good operating which it would be well for our Amateurs to emulate, judging by some of the poor procedures occasionally noticed on the bands. Thank goodness the minority only come within the category.

LISTEN on your frequency for five minutes before putting your station on the air. This will allow you to hear at least one or two of any QSOs which may be in progress. If your frequency is busy give someone then shift to a frequency not in use. Outside of Contexts, this can usually be found. The reason for this is that you will be 70% This goes for you, licensed in 1912; especially you licensed in 1953. AND ME!

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TASMANIA

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Secretary: F. J. Evans, VK3TF, Box 371B, G.P.O., Hobart.
Meeting Night: First Wednesday of each month at the W.I.A. Club Room, 147 Liverpool St., Hobart.
Divisional Sub-Editor: L. J. Edwards, VK3LE.
QSL Bureau: Inwards—T. Allen, VK7AL, 9 Thirza St., New Town, Outwards—Roy Calver, 100 St. Johns Rd., Hobart.
Zone Correspondents: Northern: M. A. Chaplin, VK3IC, 60 Meralyn Rd., Launceston; North Western: G. Wilson, 11 Cunningham St., Burnie, Tasmania.

LOW PERCENTAGE B.C.I. AND T.V.I.

BRITISH ISLANDS HAZE

A recent document released by the British Post Office, entitled "Radio Interference Data," brings out some rather interesting facts relating to the incidence of interference to Broadcast Listeners by Amateur Stations. Of 47,153 cases of b.c.i. examined, only 221 were found to be caused by Amateurs. Of 2,511 investigated complaints of T.V.I., 422 instances were found to be caused by Amateurs. This is an astonishingly low percentage from a source to which so much blame is attached who take it for granted that if an Amateur Station is in the vicinity, then it must be the cause of any kind of interference experienced. It is a credit to British Amateurs that they have kept the incidence of both forms of interference to such a low level. It is a pity that no such guidance to the Australian Amateur when his time comes. It should be a directive to those responsible to legislate to do something new to the extremely high percentage of either forms of electrical interference—will save more than a few headaches later on.

DX C.C. APPLICANTS PLEASE NOTE!

Applicants for DX C.C. and those members forwarding additional cards are requested to sort their cards into alphabetical order of Countries and not call signs.
A list set out in the same order is also required showing the following details. Country, Call, Date, Phone or C.w., Frequency.
Applications should be addressed to VK3RS, G. Harris, 50 Eighth St., Parkdale, S.11, Vic.

FEDERAL QSL BUREAU

RAY JONES, VK3RS, MANAGER

Alan VK3YU overhauled the Tx and Rx in preparation for 48 hours' solid operating during the recent "CQ" Contest. Expects that the petrol and electricity for the power units will set him back a few shillings, but maybe it was worth while.

VK3WZ, with GTH as Manus Island, currently heard on 14 Mc. cw.
Eric Macklin, ex-VK3IM, has at long last obtained his cards from a tardy printer and will spread the balance of November making them out and mailing them. This rumoured that Rob ex-VK3IO has already issued his, but none sighted for the Bureau.
New Zealand: Roy ex-VK3IR is get busy with his and then the 1953 Macquarie bunch will be in the clear.
Tasmania: The date is set for 1954, which recalled 946 reports this year and received 453 replies. Quite a bit of work involved in making out these reports and it's pleasing to see that it is not too far from the mark.

Can anyone advise whether VK3UK, who operated from the North Borneo region around August, 1954, is in the land of the living and present QTH?
Lee CIBP gives QSL address as via WIAW.

NEW SOUTH WALES

The October meeting of the N.S.W. Division was held in fine weather and 62 members were present. In the evening, the members of the Wireless Branch, talk on the P.M.G. Regulations, the problem of B.C.I., and the Advisory Committee. The meeting was presided over by Mr. Armstrong who had been unexpectedly called away to the country. After a very concise summary of how the three projects affected the life of the Amateur, Mr. Riley spent the rest of nearly two hours answering the queries of the assembled Amateurs. At the end of that time, Mr. Riley was disappointed to find that given to him after being moved by Mr. Caldwell I.D.A.

As a lecturette, Vaughan Wilson demonstrated the effects of ionisation when transformers, chokes and condensers are worked at the high voltages of the radio vacuum tubes. He illustrated a point of a previous lecture by Mr. Leo Medina, of the C.I.R.O.
The meeting ended at 10.30 with the ensuing "ragtime" after being blacked out in the hall, continuing on the footpath, as usual, and so it was obvious that a good time was had by all.
The First South Western Zone Convention was held at Wagga on 1st November. It was a social and financial success, and great credit is due to the organizers: Jim 2AJO, Zone Officer, Coolamon; Alf 2BW and Stan 2AID, of Wagga; Stewart 2PL, Griffith, Ross 2PN, Tumut, and the 2B's of Sydney. A full report appears elsewhere in this issue.

NORTHERN SUBURBS ZONE

My apologies, fellows, for missing out with last month's notes, but not having been on the bands much in that time, I could offer little news. Alan 2TH has been busy re-building the rig and experimenting with a WBK beam on 20 and 40 mc. It seems to work DX that the 2B's of the zone are getting busy. The 2B's are kept busy with Institute affairs and are responsible for the tape recording of our Sydney 2B's. The 2B's are also busy with diagrams and slides, are sent around the country branches and members are very enthusiastic about the scheme. Roy 2ARI is putting out quite a lot of material from a difficult location. Well fellows, I will be on 20 and 40 mc in the evenings from now on so how about contacting me with all the hot news from this zone—2AVG.

WESTERN SUBURBS

Activity is at a low at present owing to the poor reception of the 2B's. Alan 2B is on 21 Mc. and has a beam with telescopic elements for band changing, near Enfield I believe. The Burwood Radio Club is presently going through the procedure of obtaining a full set of A to F for 20 and 40 mc is wanted by the Club and needs only an antenna. The club holds general meetings on the 1st and 3rd of each month. For information, ring LB 3234 (week days) and ask for Barry.

decided to give it a miss were decidedly bad judges because the talk was enjoyed by all, even by those whose interest in the v.h.f. is only slight. Mr. Mason discussed weather maps, temperature inversions, and all the jargon of the v.h.f. in such a simple manner as to make it decidedly interesting to all members present. The intelligent type of question asked by members at the conclusion of the talk, together with the genuine applause that greeted the vote of thanks proposed by Gordon 8XU was sufficient indication of the success of the efforts of Mr. Mason. This lecture was taken as the test lecture for the tape recording experiment and turned out a success so I am informed. When it has been edited it will be sent out to country members together with an explanatory paper describing the blackboard part of the lecture, and it is hoped that this experiment will be worth while repeating as often as is possible, although this is entirely up to the country member.

The only important general business that was discussed at any length was that of the possibility of the Government Tourist Bureau sending us another issue of QSL cards this year. The President advised members that Jim 8FO had seen the Director of the Tourist Bureau and whilst this gentleman would not commit himself at the moment, he was optimistic as to the ultimate outcome. The matter of the Xmas Social and the Picnic in the New Year was also discussed and now all that remains is for the gang to do the right thing and both functions should be a huge success.

Among the welcome visitors were Messrs L. Zipchick, K. Keley, L. Gabb, and Claude 8CH from Mount Gambier. To these gentlemen we say "pleased to see you, and come again." The meeting closed at 10.30 p.m. officially, but the lights were not put out until after 11 p.m., which tells its own story.

SOUTH EAST AREAS

8TW has returned from his holidays but as yet Tom has not found much time for radio, that is as a hobby I mean. 8CH also is not very active since he returned from his short visit to the city, he is decidedly busy around the house. 8NS is still finding that 20 mx opens up at times and Stewart is still chasing those elusive new countries. 8KU has had a few contacts on 30 and 40 mx, although Erg is not altogether satisfied with the results of the new beam as compared with those enjoyed by 8MS.

The two Johns, 8RD and 8JA are still in the lead of the mailing. 8CJ has been leading the usual odds and the rest of Colin's spare time has been taken up with preparing the emergency fire service equipment for the coming summer. Associate member Jack Fowler's eye is improving rapidly and he has also been busy on the R.F.S. gear.

It is the usual practice at this time of the year to draw members' attention to the coming Xmas Get-Together, which is only another way of describing the December general meeting. You all know the idea by now, bring enough food for yourself, place it on the big table, and hop in and enjoy the fun. The main thing is the food, last year we took what was left over around to one of the orphan homes, but don't let that fact cause you to leave any sponge cakes or strawberry tarts out of your parcel this year because I have sharpened up my appetite during the year, and probably I will have some mates in this regard. The liquid refreshment side of the evening will be taken care of by Council, as will be the entertainment, and all that I can say is, you enjoyed last year's Social, so come along again this year and repeat the dose.

Regarding the Picnic at the Gorge Recreation ground on January 25, 1954, all that I can say is that it is primarily intended for the XYAs and the Harmonies, although the OM's will be catered for with tennis, swimming, cricket, and several contests not usually associated with Amateur Radio. I have been given to understand that the cricket match will be held between the c.w. boys and the phone boys. Book for the bus early and don't forget to bring the family. This is your day, make it a day to be remembered by all.

NEW TIME AREA

Some months ago I received a little booklet from the Rev. Gutberlet, VK5OD, which claimed to be the official organ of the Port Pirie Amateur Radio Society. I welcomed the booklet as a means of getting some news in the magazine, but after reading the entire contents several times, I decided to wait for another edition, because possibly it was my turn to be peculiar. Having read the next edition, and then the next, I placed the matter in the hands of Council in an endeavour to find a way out of an embarrassing situation. All members of Council read "Wags," as this peculiar booklet is titled, and were unanimous in their opinion

that it was impossible to even understand a word of it, let alone secure any issue of news suitable for the magazine. It was finally decided that when the editor, the Rev. Gutberlet, succeeded in writing something which could be understood, then it could be printed.

After a long and patient wait, and acting upon the direction of the VK5J Council, I am happy to quote from Volume Six—September issue—which reached me on 21st October, the following quote: "The editor, moved by compassion, refers to an item contained in the last minutes of the Society where 8RN complains that he has not received a copy of 'Amateur Radio' for some time. If 8RN requires some of the technical articles and other matter relevant to Amateur Radio contained therein, then he has something to moan about, but if he desires in addition to the above to see some mention of the activities of the Port Pirie gang, then it would be advisable for him to forget the whole thing. Generally speaking, if you desire to read sheer unadulterated tripe, then read that section by all means. You will read about the 'big spots' in the game, including the very tiring relaxation of humbug between Doc and the Parson hicks, and one can appreciate the sentence in the latest issue 'Very little business was transacted' (This refers to the last general meeting 'Ed.). As a contribution to the Women's Magazine or Page's Paper, one could give the articles much praise, but if it is supposed to represent the activities of Amateur Radio in South Australia, then it is the most blatant form of baldheaded exposure to human vision and deserves relegation to that place where guided missiles are disintegrated far away from human activity." Unquote.

Ignoring the mis-spelt words and a lack of necessary punctuation marks, something that can happen to even the best of us, I accept the criticism of the Rev. Gutberlet, or shall I call him "Guthy," because I have always maintained that if one is to be criticised, then it should be by a person who is a recognised expert on the subject, and, after all, as editor of "Wags," who is more fitted than "Guthy" to pass an authoritative opinion on "sheer unadulterated tripe" and "blatant form of baldheaded exposure to human vision." Not wishing to descend to the standard of rudeness as practised by "Guthy," but rather working on the principle, I am sure you know, of turning the other cheek, and that the meek shall inherit the earth, I thank "Guthy" for at long last giving me something to write about



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Ken. TWA has a fine piece of workmanship in a 15 mc beam which is all complete except for a motor to drive it and I believe that DX has never been so good at TWA's QTH before. TWA has recently spent a great deal in constructing a new type of beam which is switched instead of rotated, but when the final tests were made the whole thing was a disappointment as the best results were obtained with the dipole alone and as directors and reflectors were added the signal just faded out. The month's contest has been a very good year truly (R. Wilson) where there was a good roll up of members and I gave a talk on radar as applied to the last war. Supper was provided and everyone seemed to enjoy themselves.

CORRESPONDENCE

Editor "A.R." Dear Sir,

Your Editorial in October "Amateur Radio" asks why the Amateur is generally categorised as a radio mauler or wireless crank. If we could find the reason it would be easy to make the correction.

Mr. Public judges the Radio Amateur in two ways. First, he hears him on the air and secondly he observes a neighbour who is an Amateur.

In listening to an Amateur transmission, he most often hears a lot of queer jargon—meaningless to him—because abbreviation introduced for speeding up noise transmissions are used in speech when often it would be quicker to use plain words (for example, he hears "WIA" instead of "I am a wireless crank" instead of "wife"). In some cases he hears continual repetition and humour which, although probably appreciated at the other end of the contest, sounds foolish to him.

The neighbour he observes is often an Amateur who spends as much as 50 per cent of his leisure time on his hobby. He hears via local gossip of the excessive time devoted by the Amateur to what is considered a mere hobby on the air and often notes the lack of other normal activities, such as gardening and sport by the Amateur.

Amateur Radio is a most absorbing hobby, so absorbing that it can easily become an obsession and in my opinion it is the Amateurs who have become obsessed with their hobby who have brought into use the terms "radio mauler" and "wireless crank."

"QSD."

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SELL—Oscilloscope, 5 inch, complete, push-pull amps., wide range time base, in case, commercial finish, new, £28. A. White, Crib Point, Vic.

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